REMARKS/ARGUMENTS

Claims 1-18 stand in the present application, claims 1, 4, 5, 7, 8 and 14 having been amended. Reconsideration and favorable action is respectfully requested in view of the above amendments and the following remarks.

In the Office Action, the Examiner has rejected claims 8-9 and 14-15 under 35 U.S.C. § 102(b) as being anticipated by Rosenberg et al., U.S. Patent No. 5,734,373 ("Rosenberg '373"), and has rejected claims 1-3, 6 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Rosenberg, U.S. Patent No. 6,101,530 ("Rosenberg '530") in view of Rosenberg '373. In view of the above-described claim amendments, the Examiner's § 102 and § 103 rejections of these claims is believed to have been overcome, as will be described in greater detail below.

Applicants' invention addresses problems experienced in the receipt of time-critical signals by a haptic interface over a connectionless network. An exemplary device including a haptics interface is described on page 3, lines 21 onwards, *viz.* the Phantom 1.0 haptic output device. This includes a control device in the form of a processor (1) which receive signals output by a haptic output device (2). The processor uses the received signals to determine responsive forces. Where the processor and the haptic output device are closely coupled to each other, a substantially continuous reception of signals from the output device is possible Where a connectionless network (5) separates the processor and the output device as shown in Figures 1 and 2, issues of transmission delays arise owing to congestion and latency in the network, which affects the timely delivery of signals and creates instability of the kind described on

page 5, lines 5-16, e.g., as a result of the generation of a feedback loop. This results in the undesirable perception of jerkiness by the user of the haptic output device.

Applicants' invention addresses the problem by introducing a level of simulated inertia of the haptic output device in the form of a damping or inertial value based on or which was a latency measurement. This is performed by first measuring the latency in the network, e.g., by bundling a time from the clock of the sending device into a transmitted packet, etc., as described on page 5, lines 19-28. After network latency has been established, two solutions are described. In the first, set out on page 6, lines 8-31 and Figure 6, the inertial value is taken into account in the determination of the forces to be applied. The second is described on page 7, lines 4-9 and the flow chart of Figure 7, where other factors such as position history and user preferences can be also taken into account in the determination of forces to be applied.

Rosenberg '373 describes an interface for controlling a force feedback device. The portion identified by the Examiner at column 17, line 46 to column 18, line 4 refers to the use of a damping force which "indicates the degree of resistance that object 34 experiences." However, this aspect of Rosenberg '373 is not directed to overcoming the problems arising from delayed signal receipt. Instead, the damping factor of Rosenberg '373 is directed to the realistic simulation of a haptic effect, required "when moving through...a liquid," (see Rosenberg '373 at column 17, lines 58 and 59).

It is clear that the Rosenberg '373 system is one where the processor (16) is relatively closely coupled to force feedback interface device (14) as can be seen from Figure 1, where the two components are stated to be connected by a serial bus (24).

Such a system does not suffer network latency of the type which may be encountered in a connectionless network, which is the context of the present invention.

Independent claims 1, 8 and 14 have been amended to clarify that the damping factor is based on or uses a latency measurement. “Network latency” is described at page 4, lines 27 and 28 as being “the period of time taken for signals to traverse the network.” Thus each independent claim has been amended to require “the damping factor being based on a measure of latency of the signals transmitted between said one location and said current location.” This is simply not disclosed nor suggested by Rosenberg ‘373.

Nor is this key function of Applicants’ invention anticipated or suggested by Rosenberg ‘530, which describes a system where force feedback signals are sent over a network. It is understandable that this disclosure contains no mention of damping factors, as the issue of latency – although raised in column 4, line 14 – is not thought to be a problem. Therefore, combining the teachings of the two Rosenberg documents will not result in Applicants’ invention, since network latency is not realized as being a problem in the first place. Instead, the skilled person may, on combination, obtain a system wherein one or both force feedback devices are capable of realistically simulating, movement under water by application of damping factors. However, if there is latency in the transmission link between the two devices, they may still suffer the kind of instability described in the present specification, as there is no employment of a damping factor based on the time delay suffered by signals transmitted between the devices via the network, as required by the present claims.

Accordingly, each of independent claims 1, 8 and 14 and their respective dependent claims are believed to patentably define over Rosenberg '373 and Rosenberg '530, taken singly or in combination.

The Examiner has also rejected claims 4, 5, 7, 10-12 and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over various combinations of Rosenberg '373, Rosenberg '530, Chafe, Wang et al., Niemeyer et al. and Rosenberg et al, U.S. Patent 5,959,613 (Rosenberg '613). Applicants respectfully traverse the Examiner's § 103 rejections of these claims.

Rosenberg '613 does not solve the deficiencies noted above with respect to Rosenberg '373 and Rosenberg '530. Moreover, the additional secondary references to Chafe, Wang et al. and Niemeyer et al. also do not solve the deficiencies noted above with respect to Rosenberg '373 and Rosenberg '530. Indeed these secondary references are not even directed to haptic interfaces and it is respectfully submitted that those of ordinary skill in the art would not have been led to make the combinations asserted by the Examiner utilizing these secondary references with the aforementioned Rosenberg patents. More particularly, there is nothing in the Rosenberg patents to suggest that network latency may at all be an issue which can be solved by the Chafe disclosure, the Wang et al. disclosure and/or the Niemeyer et al. disclosure.

Accordingly, claims 4, 5, 7, 10-12 and 16-18 are also believed to patentably define over the cited references taken either singly or in any combination.

Therefore, in view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and that all of claims 1-18, standing in the application, be allowed and that the case be passed to issue. If there are any other

issues remaining which the Examiner believes could be resolved through either a supplemental response or an Examiner's amendment, the Examiner is respectfully requested to contact the undersigned at the local telephone exchange indicated below.

Respectfully submitted,

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